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THE GREAT COMET OF 1882.

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Just as the greatest geniuses are those who appear from out the mass of the people, no one knows how or why—and the greatest poets, say Shakspeare and Burns, come of rustic nurture, rather than of university training—so is it of comets.

Comets indeed are now looked for, and most perseveringly as well as scientifically searched for, all over the heavens every night of the year by most able astronomers in various countries, in the southern as well as the northern hemisphere of the world, in observatories armed with the most powerful telescopes of modern times; and the learned men therein do discover by their patient labours very many comets. Not less perhaps than six or seven every year. And the exact position of these among the stars is telegraphed as soon as found from one of those comet-seeking observatories to another, so that in a few days, spite of clouds in this or that locality, sufficient observations are soon procured to allow of the mathematical computers ascertaining the shape of the 'orbit,' or path round the sun, which each comet is performing, together with the peculiar angular position of such orbit in space, and the exact date of the wanderer therein coming to its point of perihelion, or nearest approach to the sun; and that is usually the end of it all. For nearly every one of *those* comets is faint and small to an almost inconceivable degree; a mere pellet of barely luminous vapour in the largest telescope; about which only a few of the learned of mankind can pretend to feel any interest, and which a very small number even of them have seen with their own eyes.

But when a really great comet appears, with a brilliant head outshining every star, and a lengthy tail stretching half across the sky, alarming and exciting the nations the whole world round, it is almost always a sudden appearance, as unexpected by the learned as by the peasant, and usually first seen by one of the latter class with the naked eye, and by pure accident, long before the learned men of the observatory equatorials have brought their optic tubes to bear on the stranger.

Thus there are in the heavens under the designation of one and the same short word, comets *and* comets indeed. Some so exceedingly faint, that only the most powerful object-glasses or reflectors will just show a something in the field on a very dark night; others so brilliant, that they may be seen by every one near the sun at noonday. Some so absolutely small, that without being very far off—amongst the planetary spaces—they subtend angles of only a few seconds, or less than the unassisted eye can appreciate; others again so large that for mere length in millions of miles they dwindle even our mighty sun into insignificance, and are seen from the earth under such enormous angles, even sixty and ninety degrees, that they render the telescope comparatively useless, and enable a better idea of the whole to be obtained by the simple unassisted eye.

Now the comet of which we have to speak in this article, the same which the world has been privileged to behold during these few last months, and is still beholding, is one of the latter character: one of the largest among the large comets; one of the brightest among the bright ones; and yet there is something else about it of vastly deeper import and of rarer occurrence than anything connected with mere size or brightness.

It was first seen—so far as the records go at present—on the night of September 7, or the early hours of September 8, at the Cape of Good Hope, by a worthy citizen in his villa half-way up Table Mountain. He had turned out, as is not unusual in that burning climate, for a saunter in his garden before dawn under the light of the stars; and there, over the eastern horizon, was the brilliant and already full-shining stranger. On September 11, it was seen at the Observatory of Rio de Janeiro, a mighty comet, and claimed as an imperial discovery there. And again on

September 17, a very respectable gentleman near London, spending his Sunday forenoon in telescoping the sun and its neighbourhood, stumbled on a comet close to the resplendent orb of day, conspicuous even through a dark-red glass; and he hoped to call it by his own name. But the chronological priorities we have described sternly forbid that, for each of these three supposed discoveries of 'a new comet' refers to one and the same body.

Next begin the observations of those who had been telegraphically warned by one or other of the successive discoverers that such a comet was visible. And here we must place with all honour the observations made at noonday on September 18, both at Lord Crawford's Observatory at Dunecht near Aberdeen, and by M. Thollon, at the grand new French Observatory at Nice. At both those places the observations were chiefly spectroscopic, and agreed well in their story. Now, what that wonderful instrument of modern research, the spectroscope, can say at all, it says instantly; and in this case it at once informed the observers, by a peculiar displacement of certain lines, that the comet had passed the crucial perihelion point of its orbit, and was hastening away from us again, almost as rapidly as it had, so few days before, shot down out of dark, distant space into our sun-illumined neighbourhood. That important fact ascertained, there was leisure to consider the rest of the spectroscope's revelations: as thus—

It is now extensively known that comets shine partly by reflecting the light of the sun, and partly by their own inherent light, whether that be produced by temperature, combustion, or electrical currents. But nineteen out of every twenty comets yet spectroscoped, have shown for the material of their own proper light, nothing but the faintest, feeblest, coldest, order of shining stuff known; namely, the blue part which may be seen at the base of any little candle-flame, wax-taper, or farthing rushlight; and which shows a mere trace of a hydro-carbon gas in weakest combustion, barely raised above phosphorescence or Will-o'-the-wisp glimmer over marshy ground.

But the present great comet when similarly tested, not only showed salt, or the metalloid 'sodium' lines burning brilliantly, but iron lines doing the same—spectroscopic lines that can only exist where iron is so intensely hot that it rises as a gas, vividly incandescent in a more fervid heat than any of our furnaces can produce. No wonder, therefore, that when to the astronomers in the Royal Observatory, at the Cape of Good Hope on September 17, the comet was for a time projected to their point of view on part of the sun's disc, it was no black body, like that of the inferior planets Venus or Mercury at their transits across the sun, but was just as bright intrinsically as any part of the solar surface itself.

All these particulars are, however, merely optical details, *physical* features, modern outcomes of chemistry rather than astronomy. But if even they show this comet to be something so remarkable amongst comets, what says proper, gravitational, mathematical, astronomy about it, both its history in the past, and prospects in the future?

The first result obtained in that way, was—that this comet of burning iron, moving at the terrific rate of three hundred and seventy miles per second (compare that with the speed of a cannon-ball moving at the rate of only sixteen hundred feet in the same small portion of time), must, at the perihelion point of its orbit, have grazed the very surface of the sun.

Next that the direction of its motion was retrograde, or contrary to that of all the planets, and to the sun's own rotation; but that the shape of its path, and its position in space coincided remarkably with a similarly abnormally moving comet seen in 1880, and thought to be revolving then in an orbit of thirty-seven years. But that comet again had been identified as being the same that appeared in 1843; though on that occasion it was moving in an orbit of one hundred and seventy-five years' period, and was considered to be the same body that had appeared in 1668.

Usually, generally, almost universally, the period of revolution of any species of body, whether planet or comet, around the sun, is something of exceeding fixedness, or of the slowest possible alteration.

There is, indeed, such a thing as ether, or a most attenuated form of gas spread throughout otherwise empty space, and which, theoretically, ought, in course of time, if extended to millions of billions of trillions of years inconceivable, to reduce the velocities and decrease the size of the orbits of every planet and every comet revolving round the sun, until one after the other they fall into that burning mass; if, that is to say, its light and heat should have been able to keep up for any such most extraordinary duration of time. In the case of our earth's revolution, or length of its year, not the smallest portion of any such effect has been discovered by the best astronomical observations from the earliest times; but there is a certain comet, one of the smallest, faintest, lightest of them all, a mere feather in space, whose movements—after twenty revolutions of it round the sun have been observed—suggest the probability of a very small amount of shortening of its orbit. But with this grand comet of 1882, 1880, 1843, 1668, we have a galloping reduction of its period, in whole years, in place of tenths or hundredths of a second, the like of which has never been approached before in all astronomical experience, and which must inevitably bring it back to the sun in a few months only, or some time next year.

Evidently, then, this comet has experienced something much more resisting than mere ether; and the idea first arrived at and published by one of the best American astronomers, Professor Lewis Boss, of the Dudley Observatory, New York (the first savant also to identify this comet with the former appearances in 1880, 1843, and 1668) is, that it must have struck some part of the sun; has gone off wounded, as it were, crippled, weakened in its velocity, altered in its orbit, and doomed to fall a victim to greater force at the next perihelion passage. And what consequences will result from that?

No one can say positively; for such an event as a comet of any kind, but much less one of the greatest of comets, falling into the sun, has

never occurred before in the range of human observation. But the possibility of such an occurrence taking place sooner or later, did not escape the prescient genius of Sir Isaac Newton; and his remarks, as gathered from him in his ripe and perfected old age by his nephew, are still most worthy to be read for advice and instruction for the presently impending occasion. Shortly, we may state, that *some* increase of solar heat must take place, even if it were to depend alone on the conversion of the dynamical energy of the comet's movement, without allowing anything for the combustion of its material, though hydro-carbons, sodium, and iron, brought into sufficiently high temperature are very powerful burners; but we know neither what weight of these or any other matters the comet carries, nor *how* it will fall into the sun.

If the whole nucleus, or governing head, of the comet should in one grand bullet form, followed in a straight line by all the sixty millions of miles long of tail (composed, as now seems probable, of such meteoric stones as form the shooting-stars of November nights), all go into the sun at one place, and at one time, some result therefrom can hardly fail to be visible from our earth, even though it be at the enormous distance of ninety-two millions of miles.

But though the spectroscope has told us so positively that the comet carries iron, sodium, hydro-carbons (coals, if you will), it gives us no right to assume them in any quantity bearing any appreciable proportion to the vast mass of the sun already existing. And when meteoric stones fall from space upon the earth, somewhat in comet fashion, they more frequently than not break-up and separate on striking the upper regions of the earth's atmosphere, first into visible fragments, and then into invisible dust, whose particles fall so slowly, and spread so widely, that it is not known when or where they all finally reach the earth's surface.*

Similarly then we may fairly expect that this errant comet, which is already reported by two or three late observers to show symptoms of separating into two or more parts, will go on breaking-up, widely scattering its materials before it makes its next solar approach; will then be absorbed into the sun, and cease thenceforward to be an independent existence, no longer revolving as now in a distinct orbit of its own around that mighty mass of matter, force, power, light, and heat, concentrated from before all terrestrial time in our grand and beneficent sun.

P.S.—Writing in *Nature* on October 23, Major Herschel, R.E. (youngest son of the late great astronomer, Sir John Herschel), now in the south of England, describes the results of his numerous observations of the comet thus tersely, and rather quaintly:

'As a whole, the comet seems to have changed wonderfully little during the last three weeks since I first saw it. Its change of place, also, is so moderate that, at this rate, there seems no reason why we should not see it for months yet. What if it should not vanish at all!'

These rather crude speculations are indeed now rendered needless by what we have already stated of the accurate orbit in space which the comet is really moving in. But for those who would like to be eye-observers themselves of the more apparent phenomena of the starry heavens, we may state that through the month of November the comet has been moving further and further away from the sun's place, and therefore rising earlier and earlier every night; or three-and-a-half hours before the sun at the beginning of the month, to seven-and-a-half hours at the end of it. That is so far as its distance from east and west alone is concerned; but then it is at the same time moving southward, and from being five-and-a-half degrees south of the sun's place at the beginning of the month, it will be seven degrees south of it at the end, the sun itself also moving southward at the same time. This will make observations of the comet very sensibly more difficult for all inhabitants of our high northern latitudes; but will not much interfere with the view of our countrymen in India, while it will greatly favour those who in Australia and New Zealand are far away in the southern hemisphere. Their view indeed will be limited by little but the growing faintness of the comet's light, as it recedes further and further from the heating, electrifying, illuminating sun, one hundred and twenty-seven millions of miles distant at the beginning, to one hundred and eighty-one millions of miles distant at the end of November. The comet's distance from the earth is also increasing, but not at so high a rate, by reason of the part of its own orbit in which the earth is moving at this season of the year; so that while the comet was distant from us one hundred and thirty-six millions of miles at the beginning of November, it will have increased its distance only to one hundred and forty millions at the end of the month.

* See article on 'Cosmic Dust,' in *Journal*, Nov. 4.

VALENTINE STRANGE.

A STORY OF THE PRIMROSE WAY.

CHAPTER XLVI.—'HIRAM,' SHE SAID DEJECTEDLY, 'AREN'T YOU GOING TO KISS ME?'

THAT a girl with five thousand pounds to her fortune, should be a lady's maid any longer, was of course downright ridiculous even in fancy. Even if Constance had lived, Mary's position would have been anomalous, and to seek a new post now was out of the question. So, with her five thousand pounds at the banker's in London, she provided herself with store of raiment, and took lodgings with a highly-respectable old lady at Brierham, and waited with patience for Hiram to come and marry her. But a cheque-book is hardly what Hibernicus calls the height of good company, and she felt as lonely and as unprotected, and almost as exposed to the ills of life, as in her days of poverty.

She waited with patience, and no Hiram came; she waited with impatience, and no Hiram came; she took to tears, and still he stayed away. And so, one day in the close of August, with much trembling and fear, she took a car, and was driven to the gates of Lumby Hall. She waited there, and sent the driver with instructions to ask for Mr Search, and to

tell him that Miss Martial desired to speak to him. Now, in a little country town like Brierham, 'a'body kens a'body,' and everybody's business is everybody else's business. Mary was an heiress and a person of note, and even the local gentlefolks took an interest in her fate, and gossiped about her over their tea-tables. It was almost universally settled that to marry a valet would be the height or depth of folly, though everybody expected that the lately-favoured lover would be pretty urgent in advancing his claims. So, when it was known that she had received no visits, and had not stirred abroad, and had not indeed received so much as a note from anybody but Mr Valentine Strange and her lawyers, it was concluded that the lover was dismissed.

The relation of this history has sometimes made the mention of large sums compulsory, and King Crœsus himself could not treat millions with greater *sang-froid* than the present writer. But I am not steeled by this familiarity with vast fortunes against a sense of the manifold values of even so small a fortune as five thousand pounds. 'Imagine, then, how glorious it glowed'—this snug little shining heap of money, in the eyes of certain unattached small gentry of the borough. At an interest of five per cent. that snug little shining heap would yield an unappreciable fraction over four pounds sixteen shillings and a penny-three-farthings per week, for every week of the fifty-two in a year, the principal remaining untouched—a metallic goose which could go on laying its hebdomadal golden egg for ever. The chief butcher of the place—for not alone were the smaller gentry interested—was a rosy-faced, red-whiskered young bachelor who did a great trade, and sometimes rode to hounds, when even the swells of the meet would nod and say: 'How d'ye do, Banister?' Now *he* looked on that little fortune in the lump, and had visions of plate-glass in the up-stairs windows, and a new slaughter-house. The corn-chandler, who was a bachelor also, turned it over in his mind, and saw a new frontage for his High Street premises. Captain Staggers, who boasted himself a cadet of the house of Windgall—the Earl of Windgall's seat, as all the world knows, is Shouldershott Castle, in the north—Captain Staggers, who had once held a commission in the county militia, and whose title stuck to him, seedy and shaky and disreputable as he was, saw, when he thought of that snug little sum, a perfect vista of barmaids serving drinks to a perfect vista of rehabilitated Captain Staggerses. Mr Quill, the lately-imported Irish solicitor, saw a larger house; and his mother, Mrs Croke, a second time widowed, had a beatific vision of new window curtains and an Axminster carpet.

Little Mary, unwitting of these fancies, sat in the car, drawn a little off the road in the shade, and waited for Hiram Search. The driver, though he was a discreet man, and by not so much as a wink betrayed himself, knew all about it, and had the clearest understanding of the situation. Returning after an absence of ten minutes, he stated that Hiram would follow by-and-by; and hinting in a conversational manner that the day was dry, that in the coming interview it 'ud be awkward to have a fool like him a-lookin' on,' and that there was a public-house three hundred yards away, he received a gratuitous sixpence, and departed. Mary stood up in the car, and craned her neck to make observation of the carriage-drive, and in a little while saw Hiram, with his long legs striding out like the legs of a pair of compasses. At that spectacle her courage all deserted her, and she descended from the vehicle, and hiding herself behind the body of it, waited with palpitating bosom. Hiram came, looked about him, saw the car, and the fluttering dress behind it, and walked straight to where she stood.

'Now,' he said, 'I take this kind of you—I take it very kind.'

'Hiram!' said little Mary, looking up at him appealingly, with one outstretched hand set towards him.—He took the hand and shook it gravely, repeating that he took it very kind of her.—'Hiram,' she said dejectedly, 'aren't you going to kiss me?' Her lips pouted and trembled a little, like cherries that kiss each other on a shaken branch.

'Cert'nly!' said Hiram, and did it with solemn alacrity.

'Why don't you meet me as you used to?' she asked tremulously.

'Waal, my Pretty,' said Hiram, 'in the words of the immortal bard, Scotland stands not wheer it did.'

'I don't know what you mean,' she answered with an air of assumed disdain. 'You're not true-hearted, Hiram.'

'Mebbe I ain't,' said the accused; 'but I fancy I am.'

'Then,' said she with irresistible logic, 'why didn't you put your arm round my waist?'

'My dear,' said Hiram, serpentining his long arm about her, 'I'd always rather be asked into a man's house than be kicked out of it. I take this very kind of you, and very loyal an' true-hearted, my little dear.' He looked down at her with his queer sallow face beaming. 'You ain't sp'iled by fortune,' he said. 'Are you?'

'Hiram!' cried Mary again, and made an indignant pretence of tearing herself away from him. 'How could you think it of me?'

'I didn't,' said Hiram. 'Look at me. Is this here cheek of mine grown pale with care? Is my beamin' eye grown dim with hidden tears? Is there any sign in my hull anatomy of the gnawin' of the canker-worm? No, my dear. I ain't been fretting, not an atom. I've just been waiting for you to come, and say: "Hiram, your pretty loving little gal ain't changed." And now you come and say it, don't you?'—She said she did; and indeed, as she nestled to him and gazed up at him, it looked as if she meant it.—'That's all right,' pursued Hiram. 'Don't you see now, I couldn't come to you and say: "You took me when you was poor, and you'll have to stick to me now you're wealthy." I couldn't even seem to mean that. I won't say you'd have broke my heart, if you hadn't come. My heart's a tolerable tough old muscle, and it'd take a deal of breakin'. I won't say it wouldn't have ached. I think it would; but there's a margin between achin' and breakin', ain't there?'—Mary supposed so, laughing at his quaintly serious face, and holding his gaunt hand in both hers.—'But now,' resumed Hiram, 'there's no such thing as a clean hank as'll run five minutes without ravelling in this

world, is there? And we've got trouble in front of us.'

'Trouble?' she repeated. 'What should trouble us?'

'Don't you be scared,' said Hiram. 'Nothing much. But you can see I'm bound to the boss for awhile to come, anyhow. Now, it stands to nature you want to get married, and so do I. And it stands to reason that a young lady with a fortune can't have her husband acting in my present capacity. In any other man's service, I should feel the present capacity mean. I own up to that; I should feel it a derogation from an American citizen's privileges and proper feelings. But not with Gerard Lumby, Esquire. No. Well now, you see, I don't want to scratch a sore place, but he's had a great deal of trouble, and I am kind of sorry for him and attached to him. He's got used to me, just as you have, my dear; and if I went away just now, he'd miss me. He's mending. I can't make it out; but from the night Mrs Strange died, he's that changed I hardly know him.'

'How is he changed?' asked Mary, speaking rather because Hiram paused than for any other reason. She could not blame Hiram's unselfish devotion; but you may be sure that she looked forward to the waiting it promised with no great rejoicing.

'He used to be just as hard and cold,' said Hiram, 'as a frozen anvil. He wa'n't like a man after you three went away together. And now he's as sweet and mild with everybody as a roarin' democrat receivin' a British Prince. He's sad sometimes—that mournful, it'd melt the innards of a Bengal tiger only to look at him. But it ain't the same kind o' sadness; and him and Valentine Strange was arm in arm walking up and down this road two mortal hours the day afore yesterday.' He paused after that statement, as if he expected to be told that it was incredible. Mary received it with an astonishment which justified his expectation.

'Arm in arm!' she said. 'Mr Strange and Mr Lumby! Mr Gerard?'

'Arm in arm,' he said. 'And looking as friendly as a pair of rival actors. Only it was plain they meant the friendliness, and the rival actors pretty gen'ally don't.'

At this moment, a step sounded in the lane, and Mary escaping from his arm, peeped round the corner of the moss-grown wall. 'The driver's coming back,' she whispered.

'Kiss me quick, my honey!' said Hiram. 'I shall see you soon. Likely as not, drop in and ask you for a cup of tea this evenin'.'

The driver appeared; and Mary, with a final shake-hands, as if no tenderer farewell had just been taken, entered the car. Hiram, with mighty gravity of demeanour, watched her driven away, walked back along the gravelled drive, entered the house, and marched straight into the presence of his master.

'Well, Search,' said Gerard, 'what is it?'

'Can you spare me this afternoon and evenin'?' Hiram asked.

'Yes,' said Gerard, looking up from a book which lay on the table before him.—'Search,' he said suddenly, and with a little smile, 'I have been neglecting your affairs very sadly. Are you going to Brierham?'

Here, for the first and last time in this narrative, let it be recorded that Hiram blushed. 'I am,' he said, defensively.

'Of course you are. Why haven't you gone before?'

'Well,' said Hiram, 'there was reasons, good reasons.'

'No trouble, I hope?' said Gerard.

'None in the world,' said Hiram.

'When do you think of getting married?' asked Gerard. 'I suppose I shall lose you soon?'

'No; you won't,' said Hiram. 'We ain't in any hurry.'

'Very well,' said Gerard quietly. 'She's living with old Mrs Norton, I think—isn't she, in Brierham High Street?—Ah, I thought so. Will you tell somebody to saddle Roland and bring him round? I shan't want you again to-day.'

'Thank you,' said Hiram, and went away on his errand.

'No train for two hours,' said Gerard to himself with a sad little smile. 'I can do it in an hour easily.'

Ten minutes later, he was at the hall door in attire for the saddle. A groom led Roland round; and the young fellow, mounting, rode away, straight into Brierham town, and dismounting at the hotel, walked across the quiet sunny street and rang at Mrs Norton's bell. It happened at that moment that Mary was in converse with Mrs Norton. Your feminine lover seeks a confidante as a duck seeks the water. This, like other generalisations, may be disputed by singular examples; but Mary was not a very exceptional young woman, and Mrs Norton knew how the land lay; whilst the butcher and the corn-chandler, and the seedy captain and the Irish Quill, and *hoc genus omne*, surveyed it wrongly, and their judgment of its qualities was all awry. At the statement that a gentleman was in the parlour and wished to see her, the old lady bustled down, and was amazed to find Mr Gerard Lumby standing there.

'Mrs Norton,' said Gerard, shaking hands with her, 'how do you do? I am here as a conspirator, and I want you to be another.'

'Lawkamussy, Mr Lumby!' said the old lady, quite flustered.

Gerard explained. 'I want to see two people happy, Mrs Norton. One of them is the young person now residing under your protection, and the other is'—— He paused.

'I hope it's the right man, sir,' said the old lady, smiling nervously.

'I think it is,' said Gerard. 'Do you know who the right man is?—Very well. If I am wrong, correct me. I think the right man, who is in a position very much below his worth, wants to put off the marriage because he is attached to his employer, and because he thinks his employer cannot spare him.'

'It's like a dream, your saying so, Mr Lumby,' the old lady cried out. 'She's just been telling me them very words up-stairs.'

'Very well, Mrs Norton,' said Gerard. 'I thought it was so, and I wanted to be sure of it.'

'She's a dear nice girl,' said Mrs Norton doubtfully. 'Do you think, sir, as he's worthy of her?'

'My dear lady,' said Gerard, 'Mr Search is

a pearl among men. The woman who marries him is to be envied, if she has only the sense to know his value. And whatever you may think of his position, he is just as well-to-do as she is. But I forgot. That's a secret. Don't say a word about it till they're married.' So he shook hands, and rode away again, leaving the old lady almost bursting with her secret.

(To be concluded next month.)

COUNTRY PLEASURES.

To outsiders, country-life often seems dull; and it must necessarily be so to some extent, as compared with life in town, unless there is not only a keen and perceptive love of nature, but also a considerable variety of taste. A man must be able to find not only an ever-varying and enduring charm in the sublime grandeur of lake and mountain, but also an attraction sufficiently engrossing to amuse him amid such commonplace scenes as the moist bank of a shady lane, or the tangled luxuriance of a hedgerow or wayside thicket.

A stranger looking down on the brown Lancashire landscape that surrounded our author, Mr Milner, when he began with the year his rambles, which have been charmingly described in his book, entitled, *Country Pleasures* (London: Longmans & Co.), would have pronounced the prospect tame and uninviting in the last degree. But to the initiated eye it was full of interest; each hidden dell among the breezy uplands held a secret treasure-trove. He knew each sequestered wood where the catkins of the hazel were already beginning to swell; each nook where the broad wrinkled leaves of the primrose were already pushing up through the moss to meet the genial breath of the advancing spring. Even in the sombre winter hue of the landscape, there was beauty—the beauty of shifting light and shade; when the sunlight breaking through the heavy clouds, would light up for a moment the brown dales and leafless trees, making of the desolate scene a picture of evanescent but glowing brightness. Then his garden—a green silvan inclosure, with sufficient space in it for wild-flowers to grow in the tangled profusion of their native glades and woods—was a constant source of delight to him. Like all flower-lovers, he knew each several plant—each blossom was an intimate and particular friend. He noted the slightest change that occurred in them, and during the tardy, trying days of spring, hailed each new leaf that uncurled to the cold north wind. Winter went and came again, as is its fashion in our uncertain climate; but in his garden he had, what many garden-loving folks sigh for in vain, a particular and highly-favoured corner—'where we always get out of the sharp wind, where there are a yellow jasmine and a few rose-bushes, and a shapely thorn with a seat under it. Round this is a little Dutch garden, in which the tulips and crocuses will first be seen.'

It was quite an era in his homely calendar when the faint February sunshine began to lend a little warmth to the cold moist air, and the delicate green tips of the snowdrop and crocus could be observed breaking through the half-frozen soil. Next—for the true lover of the country is always more or less a naturalist—he began to expect, and then to hail with rapture the first notes of the blackbird and thrush, those sweet and gladsome heralds of the spring. Mr Milner first heard their welcome notes at the close of a wet week in February. 'A wet week in February!' you exclaim; 'can anything be more dreary?' Dreary enough, no doubt, to many. But to the observant eye, those dim and rain-suffused skies, with which we are so familiar, have a soft and gracious charm of their own. He has still much to learn in country pleasures who has never observed what a variety and beauty there often is in rainy weather; not only in those sudden showers where the sun sparkles through the gleaming raindrops with a fitful radiance, but even in the slow-falling misty rain, with little or no wind to blow it about, and no shaft of sunlight to illumine the masses of soft gray cloud and vapour. It is, of course, very possible to have too much of such a thing; and it is somewhat difficult always to remember, as we look at the drenched, water-soaked land, that it is to our moist skies that we owe the fresh colouring of our woods, and the vivid green of our meadows and grass-lands. Then there is always the delight of the fine morning or evening after the rain to look forward to, when the heavy skies burst asunder as if with a supreme effort; and the sun shines out warm and bright, and the cold moist earth basks in his smile; and the joyous breezes rustling through the leafless trees, seem already sweet with the scent of flowers. It was on such an evening, glorious and hope-inspiring, when the waning sunset faintly touched with its parting radiance the pointed gables of the ancient house, that Mr Milner heard his first thrush. A gush of melody clear and silvery rose flute-like and sweet into the darkening sky, and he knew that the birds were beginning to mate, and that the first nest—another landmark in the advancing year—might soon be looked for.

First, however, came Shrovetide, dear to the children's hearts, with its great bonfire of faded Christmas holly, and its pancakes tossed by unfamiliar hands. 'There is wisdom,' Mr Milner thinks, 'in breaking the dead monotony of modern existence by observing, especially for the sake of the young, such simple festivals as yet remain in vogue;' and so Shrovetide was observed with all its peculiar honours of hissing pan and savoury cakes.

In the beginning of April came the throstle's nest. This particular bird was a thrush with an evident taste for letters, for she had inwoven with the grass and slender twigs of her nest a scrap of a London newspaper, and had fixed her little dwelling snugly and comfortably beneath the overhanging leaves of some ivy that covered a garden summer-house. 'A day or two later,' says Mr Milner, 'it had been plastered with mud, and it was also lined—as a piece of luxury, I suppose—with the soft fibres of some decaying wood. Yesterday, I found that the first little blue egg had been dropped into the nest, which the prescient bird had finished three days before. And here too was beauty, the little regarded beauty of the bird's egg, beauty of form and of colour, perfect elementary form, and delicately simple colour lavished upon a corner where no eye might ever have seen it, where, probably, by no other eye than my own will it ever be seen.' This bird,

like others, became very familiar with its observer, and allowed him to come close to her nest without showing any signs of fear.

Spring in her full flush and glory was now abroad in the land; the delicate leafage of the beech was in all its first silky freshness; the orchard-trees were in bloom; the cattle in the flowery meadows were deep in grass; the pigeons were sunning themselves on the farmhouse roofs, and the first early swallows were twittering under their eaves.

This beauty, home-like and familiar, Mr Milner was fond of contrasting with the vast moors that sweep desolate and brown around the huge 'buttress' of Kinderscout in Derbyshire. These were easily reached by train; and the very mode of transit, swift and noisy, an apt embodiment of the untiring energy of the nineteenth century, enhanced to the lonely beholder their solitude and immobility. 'Having once,' he says, 'climbed to the tableland of these moors, you are in an isolation of solitude which can only be compared with that of mid-ocean.' Their heathy expanse is a world by itself, set apart and consecrated to solitude, but yet a world full of beauty. The keen bracing air is permeated by the scent of the gorse and wild-thyme; masses of cloud drift along the breezy sky, now casting deep shadows on the sombre sweep of heathland, and the next moment parting asunder to dart a gleam of brilliant wind-blown sunshine on the emerald strips of moss, the clumps of brown and green fern, and the gray weather-beaten crags that rise like landmarks from the deep-toned umber hue of the heath. The moor-birds rise from beside the path with a wild and piercing cry. The glimmer of the sunshine becomes more unfrequent; the hurrying clouds drift up into more compact masses; everything betokens the coming tempest. A few minutes more, and the moorlands, with their shifting lights and shadows, will be wrapped in a cloud of swirling mist and rain.

With summer comes the hay-harvest in the beginning of July, the hottest time of the year; when, if the season be beneficent, we have bountiful outbursts of sunshine, and the scents of the rose-garden mingle with the fragrant breath of the new-mown hay. The most handsome wild-flower of July is the foxglove. Its favourite habitat is the face of a steep ravine, where the bank is too precipitous to afford a footing to the birch and hazel that clothe its lower declivities. There, on the shallow soil, or in clefts of the out-cropping rock, multitudes of foxgloves flourish, their pendent bells of purple waving in the breeze, or reflected in the still pools of the streamlet far below. There is no monotony in this blaze of purple beauty, which blends in admirably with the rich hues of the glen, with the fern and hazels, and the silvery stems of the birch-trees, and the tangle of wild-flowers about their roots, woodruff and wild-mint, and the gay willow-herb, and the humble little yellow tormentil.

Towards the end of July, the birds, whose domestic duties are finished, and whose families are comfortably established in the world, cease to sing. The woods henceforth are comparatively mute, until the robin begins his autumn song; and from his Lancashire garden Mr Milner moved to the coast of Arran, and noted with some surprise that its northerly shores, which he had supposed to be sterile, produced abundance of flowers. 'At the edge of a wood only a few yards from the water, and where the salt spray itself must often fall, I found,' he says, 'diminutive rose-bushes covered with ripe berries; the wild chrysanthemum, the purple vetch; the woodruff, tiny in size, but sweet as ever; and even the dainty forget-me-not; while the woodbine festoons the trees, climbing to a height of twenty feet.'

But more beautiful even than the flowers are the effects of sea and mountain. The sea, which is always in the foreground of the picture, is full of surprises, of infinite varieties, which often strike the beholder as inconceivably beautiful. Every change of the changeful weather has its own peculiar charm; and the soft gray September skies of Arran often brighten at sunset into stretches of lambent gold, resting on a bank of bright crimson, which passes on the far horizon into dusky purple; and beneath that imperial pall, the heaving expanse of water, and the shallow pools left on the shore by the receding tide, gleam out as if touched with molten gold. The colouring is almost too intense to be steadily looked at. The grass and the shore-plants, and the weather-worn rocks, and the hills with their wild peaks standing out against the sky, all glow with a deep and yet subdued intensity of shade, which brightens the rose-red glimmer of the rock-pool at your feet. Up among the hills at the mouth of Glen Sannox, particularly towards twilight, the atmospheric changes are often very fine. Sheets of mist sweep around the peaks of Goatfell and its sister heights, which, like the sentinels of an enchanted land, loom through the masses of gray vapour, indistinct, vast, and threatening. The gloom of night is beginning to overspread the landscape; but the sun has not yet set; and suddenly, as if by the touch of a magician's wand, the veil of mist is swept aside from the broad brow of Suidhe Fergus; a soft subdued glow of saffron suffuses the darkening landscape, brightening gradually into a full gush of sunlight. The slopes and gullies with which the sides of the hills are seamed are distinctly seen for a moment, brought prominently out by the flood of light. Then the gleam of sunshine fades as quickly as it came, the clouds gather thick and fast over the shifting canvas, the wild west wind rushes down the gorge, hurrying mists efface the glowing picture, and far behind, 'strange sounds rushing down the unseen gullies with an almost human cadence,' bid the adventurous traveller a stormy good-night.

Autumn in the Lancashire garden had its own peculiar pleasures. There were plentiful stores of fruit to be gathered in, and clumps of woodland that rivalled, with their purple and russet-red and gold, the gayest hues of the parterre; and from amid the leafless boughs of a giant elm was heard 'the sweetest, most cheery sound which autumn has to give—the clear whistle of the robin.'

Halloween was kept as Shrovetide had been, by the youngsters of the family, with its own appropriate ceremonies. Chief among these was a great pail of water, which was set in the middle of the kitchen floor and filled with apples—'the ducking and splashing for which were a source

of great fun; and if one chooses to moralise,' says our author, 'one may see how success in the slippery chase falls only to the youngster who can bring to the pursuit both cunning and perseverance.'

November and December, with their long dark nights, and days dim with mist and fog, have a natural affinity with folklore, and Mr Milner tells us that the district around him, lonely and isolated, is still a stronghold of ancient superstitions. There are troops of harmless fairies—'little men,' as they are called—whom it is sometimes the height of good fortune to meet. Wonderful legends are told of the weary ploughman suddenly confronted on the upturned furrow by a tiny brown figure, who offered him a draught of ale in a nutshell; which the countryman accepting in simple good faith, found to be an earnest of all possible good things.

A mountainous country suffers less from the fury of the elements than a landscape whose chief beauty consists in its colouring, in the harmonious blending of wood and valley and meadow. The stormy winds of November had swept away the last lingering splendour of the autumn forests, but Mr Milner found the Lake country still pre-eminently beautiful. In support of his admiration of winter among these classical lakes and hills, he quotes an eloquent passage from Wordsworth's 'Description of the Country of the Lakes in the North of England:' 'The variety of winter-colouring in the hills is such, and so harmoniously preserved, that it leaves little cause of regret when the splendour of autumn is passed away. The oak coppices upon the sides of the mountain retain russet leaves; the birch stands conspicuous with its silver stem and puce-coloured twigs; the hollies, with green leaves and scarlet berries, have come forth to view from among the deciduous trees, whose summer foliage had concealed them; the ivy is now plentifully apparent upon the stems and boughs of the trees and among the lichen-covered rocks. In place of the uniform summer green of the herbage and fern, many rich colours play into each other over the surface of the mountains—tawny green, olive, and brown, beds of withered fern and gray rocks being harmoniously blended together.' It is, in fact, a perfect paradise of what painters call 'low tones,' no bright colours, but the soft subdued green and gray of mosses and lichens, and the faded browns of grass and ferns in all varieties of shade. Round the door of a comfortable farmhouse, where our author found shelter for a few hours, the colour was deeper and warmer; for the crimson light of a frosty sunset filled the air, and harmonised with the cheerful farmyard sounds; the cocks were crowing, the oxen lowed from the courts, and the gladsome voices of women and children broke the wintry stillness. Every one was sliding and tumbling and getting up again amid peals of jocund laughter; and far up in a still world of their own, the snows on the higher peaks of the everlasting hills reflected back in a thousand hues of beauty the smile of the sunset. Some blushed rosy red; others caught only a faint pink glow, which quickly faded into spectral blue; while others, again, glistened cold and bright, as if decked out in robes of shining silver.

This charming round of Country Pleasures ends, as is meet, with Christmas and New Year, with plentiful decorations of mistletoe and holly, and plentiful good cheer on the board, and a round of kindly visits to neighbours, rich and poor alike. One of the latter, John the Mower, thus pronounced his eulogium on the happy Christmas-tide: 'Ay, well—ay, to be sure—if we could be ever as we are now, full of good meat and drink—meat and drink.' The robin on the thorn, who has just had his dinner of crumbs from the window-sill, takes perchance the same materialistic view of Christmas as John the Mower; at all events, he also is happy, and undaunted by the cold, trills out upon the frosty air his clear, cheerful song, in which we hear an earnest and promise of the coming spring.

BABOO ENGLISH.

THE following specimens of letters and petitions are taken from a large collection made by a gentleman during a six years' residence in British Burmah. It should be borne in mind that the habit of the Oriental, when he has a request to make, is usually to hand in a written petition in lieu of asking by word-of-mouth. Those of the documents quoted below which are from Chinamen and Burmese, are written by their own hands; while those from natives of India are mostly written by professional petition-writers, who may be seen sitting under an umbrella, at a light trestle table, beneath a tree, near the entrances to the law-courts.

The things that chiefly agitate the Oriental mind are (1) desire to obtain an appointment; (2) desire to obtain increase of pay; (3) desire to obtain leave of absence on account of the death of some relative. It is no uncommon thing for a clerk to request leave of absence half-a-dozen different times to bury the same mother, truthfulness being an unknown quality in many parts of the 'gorgeous East.'

The following mass of incoherence is from a Burmese 'gunner' to the superintendent of a saw-mill. His desire is to obtain a bonus—on the number of squared logs of teak which he is able to turn out—in addition to his pay.

To G. MUIR ESQR. Chief Manager.

The humble petition of Ko Youk respectfully sheweth to represent that; I have loyally, and diligently served under merchantile service in various capacities since 1870 during which I invariably earned the approval, and commendations of all my superiors. That while several persons are now and then promoted gradually increasing in the subordnate; That in 1880 when I was proposed to station at Moulmein the best European Manager serving in the Moulmein district I was selected by the Chief Manager Mr R. S. Jones for the post as Head Clerk at Mr Gregory's Mill and I could act as Manager in any of the mills that are Trading in the Town of Moulmein I understand that my manager is prepared to reconsider the claims of all the subordnate who have not hitherto receive due promotion in the service I therefore pray that my manager may carefully inquired of my approved past service and can foward my Certificate bound

as Manager having being served under your service daily respectfully beg to inform these few request that I am also liable to get some extra money on account of my Square Conversion which has been given by the Former manager's on the Squaring Mill I conclusion having a large family to support with I have to thank your esteem favor and hoping to favor with the above requestion for which I shall ever thankful to your honors gratitude; Hoping to be excused at your honors valuable time *P.S.* Therefore having served under your service many Head Clerks who have not had any a English education in case of necessity I could do any kinds of English account in the Timber Trading line and *being very curious in my consideration of getting extra money in the Old Mill is somewhat like hatching a great many eggs without a Hen* If I dont try hard in conversion of Squares how can you expect to get the Slabs for Scantling &c.—I remain, &c.

The passage we have italicised is particularly lucid. The next specimen is from a Madrassee Christian who has benefited by an English education.

RANGOON, *3rd January* 1881.

To J. CONNELL, Esquire,
B. B. T. C. Limitted & Co.
Rangoon.

GENTLEMAN—I beg most respectfully to bring these following few lines to your benign consideration Hoping to Satisfy my confused mind.

Sir, I have come from Madras some months ago, and I have tried in many places for a post except this Office I am Sorry proved unsuccessful. Having heard that you are a Liberal Generous and Pitiable gentleman towards poor. I have made up my mind to come and ask your honor for a post under your controlobility in the Firm or in the Mills.

Praying to comply my request for which act of charity and kindness I shall in duty bound shall ever pray—I beg to remain, Gentleman, your most obedient and humble Servant, V. REUBEN JACOB.

By the following amusingly ambiguous epistle, a Burmese clerk states his incapacity for work, and expresses a hope that further sick-leave may be granted him:

SIR—Having the feaver again more than before I wish you will not have the vexation to permit me further.—I Remain Yr obed.

MG CHIT OO.

The following speak for themselves:

MOULMEIN, *9th April* 1881.

SIR—We are exceeding glad in penning you these few lines, suspecting the holidays of the Burmese new year. During this time all the Burmese offices or of—the foreigners ought to be closed. Because there is custom over the whole communication not to do even the least important work. Therefore will you kindly grant us leave for three or four days. We hope that you will grant us leave without any discontent.—We are yours most Obedient servant, &c.

SIR—We the undersigned beg to inform, that on Tomorrow our Burmese Lent beginning Feast will be fell, so we shall most humbly beg of you will be pleased to allow us an holiday as usual.—We remain, Sir, Your Most Obedient Servants, &c.

HONOURED SIR—I beg most respectfully prays that your honor will be kindly pleased allow me an advance of R30/ being of our Chinese new year, but, I am short of expense for that day.—I beg to remain, Gentleman Sir, Your Most Obedient Servant, MAY SHAING.
[Chinese]

RANGOON *6th February* 1880.

SIR—I have the honor to inform you that I was sunstruck and Fever on account of that Your servant could not attend to work.—I remain, &c.

The humble and respectful petition of K. B. B——.

Most respectfully showeth—That your petitioner, an under graduate of the Calcutta University has formerly lived in credit in the world, but through a variety of losses in several law-suits and through the *sudden death of some lively young members of the family*, is reduced with his family to the lowest state of poverty and destitute of the necessaries of life; and being desirous to discharge his duty as a sole guardian, he has presumed to address himself to your honor for one of the present vacant place of clerkship in your Office, and for which he can make it appear, he is properly qualified, and will produce certificates of his education, capacity and good moral character, and if so happy as to seem worthy of your notice, he shall, on all occasions observe the strictest fidelity, and make it appear to the world that he has not been unworthy of your favour; And as in duty bound shall ever pray.

On the 24th of October 1881, the writer promised a Burman, Moung Khyin, to employ his brother-in-law, Moung Shway Yee, if he would come round to the office. This is the letter of introduction which Shway Yee brought: the meaning is, that Moung Khyin will be much obliged if Shway Yee is employed according to promise:

DEAR SIR—Herewith I send you the bearer Moung Shway Yee, was employed under you in the Office, when you promised me Yesterday in Our Yard. I shall be much oblige and thankful to you.—Yours faithfully, MOUNG KHYIN.

Boon Paw, a Chinese tally-clerk, being laid up with fever, his brother, Ah Lowe, writes for permission to send him to his father in Moulmein, and wants to know if he is to receive half-pay or none at all while he is ill. This is how he puts it:

SIR—My brother Boon Paw Tally clerk, suffering by fever since about 20 days ago, and he is taking our Docter advise, but sorry still very bad, so begging of you be pleased to allow him to go back Moulmein on Tomorrow by his father to cure there. And also please let me have an order the 15 Days he is in fever in one month of Augst is to be cut all or ½ to be paid.—Yours obediently, &c.

The final specimen we shall here give is an application for work, made by a native of India,

to a merchant of Rangoon, and was thought so comical by the recipient, although he was—like all other residents in Rangoon—daily deluged with strangely worded petitions, that it was published in the *Rangoon Gazette* of February 14, 1879.

'*There is life for a keen look.*'

Life Supporting Sir—The bearer of this begs to bring his most deplorable case before you trusting you to be his parent and guardian. That he is brought to such a low circumstances that he can hardly support himself and his family. Now your humble petitioner begs to say that if there be even a petty post in clerks under kind control please try your utmost to confer the same on him. Sure he is in an unutterable trouble that this life is heavier to him, nay, the shades of death are happier to him than those of life. Let it not be hidden that as in these days he is out of employment it would be your great kindness to confer some good and supportable post on him and as he is a man of large family to please for your blessed name's sake be a father to him and his family. Please lose not this good opportunity out of your all powerful hands of making a room for him under you in clerks. Surely in such a hard circumstances your refusal will be the case of real death and your kind reception the real cause of life for him.

Now let any one go, but please try your utmost to save him, pass by any one, but pass not by him, reject some one, but reject not him, and put asunder some one, but make him adhere close by in any way you can. Please take him in your kind honour's office as soon as possible. Nay, sooner than the twinkling of an eye.

As one has the source of his life in this and another in that way but he alone has none except thee and God alone. O Thou high-ranked man of good humour. For this act of your over running you shall both be blessed and rewarded from heavens.

P.S.—A drowning man will catch at a straw. Pour not water on a drowned mouse. Give and it shall be given unto you. The measure we mete to others shall be meted to us again. A withered purse, a withered face. Sorrow's best antidote is employment, &c.

He begs to remain,
most honoured Sir,
with much gratitude
your most obedient and
foot-kissing servant
18-7-78. Illahie Buksh.

BOOK GOSSIP.

It may be pointed out as a characteristic of our modern men of science and of their immediate predecessors, that, however they may differ from many of their fellows in matters of intellectual research and speculation, they have led notably good and true and useful lives. Hence the record of such lives has for their successors something more than the interest which attaches to merely great names; there is in addition the healthy stimulus to intellectual and moral achievements which we derive from the contemplation of adverse circumstances patiently overcome, of high ends worthily gained, of life-purposes devotedly followed out. This is indeed the great end of biography; and biography which, while embracing many things, does not embrace this, had better not be written.

Some of those men of science have had biographers innumerable, others of them are less written about, and consequently less known. To supply this defect, and to render the chief names among Botanists, Zoologists, and Geologists more familiar to the rising generations, Professor P. Martin Duncan, vice-president of the Geological Society, has published a volume of such biographies under the title of *Heroes of Science* (London: Society for Promoting Christian Knowledge). But the book is something more than a mere collection of biographies. In regard to Botany, for instance, chapters are given to the consideration of old fancies and notions about plants, such as are found in the *Metamorphoses* of Ovid, and in the works of the early Greek writers. The author also sketches the lives of the ancient botanists—Aristotle, the first botanist, born 384 B.C., Theophrastus, Pliny, and others. Then, after the long sleep of centuries, we have the revival of science that followed the release of the human mind from the trammels of superstition consequent upon the great religious reformations of the sixteenth century. This period gave us the quaint old English naturalist and traveller, John Ray, and the earliest systematic botanist in France, Joseph de Tournefort. Then by-and-by came Linnæus, and with him the formation of botany into a science, with his artificial system of classification, and his untiring and heroic energy in the pursuit of plant-knowledge.

In the department of Zoology, Professor Duncan follows a similar method of treating the subject, beginning with the ancients, and descending to modern names, including Buffon, Pennant, Lamarck, and Cuvier, to each of whose contributions to the science of animals reference is here made, with well-written and graphic portraitures of the men themselves, as they appeared in the daily round of their life and labours. Then we have the Geologists—the heroes of a newer science than either of the foregoing. A wonderful science, that has made familiar to us a kind of knowledge which was at one time thought entirely beyond the reach of man's intellectual vision, revealing to us an exact and impressive picture of our earth in its various stages of secular cooling, from the time when it was little more than a molten mass with a newly-formed igneous crust, down to the time when this crust was covered with rocks made from its own waste materials, ground down by ice and tides and rains, and spread out in stratified order at the bottom of seas and the mouths of great rivers, and gradually covered with the earlier forms of vegetable life, till we have the globe as we see it now with all its wealth of animate and inanimate existence. This portion of Professor Duncan's work seems to us to be the most interesting, as dealing perhaps with the heroes of a science in which he may feel a stronger and more genuine interest than in the others. The story of Hutton, the Edinburgh geologist; of William Smith, the father of English geology; and of Murchison and Lyell, its later leading representatives, is well told by our author, and cannot fail to awaken in the minds of readers some stirrings of that noble emulation which led these

workers on from victory to victory. We have not for a long time seen biography at once so healthy in its tone and so instructive and stimulative in its effects.

A SLIGHT SCARE.

In the first of those four entertaining little volumes, *Curiosities of Natural History*, the late Mr Frank Buckland has related, in his pleasant, chatty, discursive style, an anecdote of a gentleman in India who was favoured with the presence of a cobra da capello under the flooring of his bungalow. Snakes very often take up a residence beneath houses in this way, especially in tropical countries, where the buildings are frequently of wood, and usually raised from the damp or insect-teeming earth on piles of some sort; such a situation being almost inaccessible to anything but a 'varmint.' Here they rest in security by day, and by night sally forth on excursions prejudicial to the henroost, to the frogs in the water-tank or bathroom, or to the rats and other small-deer which always affect the neighbourhood of omnivorous man. So habituated do people become to these creatures in serpent-ridden lands, that so close a vicinity to them is often but little regarded, and scarcely any attempt is made to eject the visitor. I once slept in a house up in Guatemala where a huge venomous snake, a *toboba* —or what was believed to be such—was known to have made the under-space among the piles his abode for more than a year, having been frequently seen by lantern-light, though it never made its appearance indoors. Not that people are fonder of such things in this part of the world than in any other; possibly, they are a little lazier; but in any case, familiarity will always breed contempt. Mr Buckland's friend, however, so little appreciated this confidence on the part of the reptile, that he went the length of cutting a hole in his floor, baiting a fish-hook and line with a frog and passing it down. The lure succeeded. That same night he was aroused by a tremendous scuffle and commotion under the boards; and the line being drawn up, brought with it the unlucky cobra, with its neck expanded and 'spectacles' all agog—when, we may be sure, it quickly received the *coup de grâce* from a coolie's bludgeon.

I had been reading this story one hot night at sea as I lay in my bunk, and had fallen asleep. Scarcely a breath of air came in at the open scuttle, and the candle in the swinging stand burned with an unflickering flame, though the good ship *Elbe* was steaming down the coast of Brazil at the rate of thirteen knots an hour; for my cabin was on the 'lee-side,' and the lower edge of the porthole descended pretty nearly to the level of the water as she rolled slowly and rhythmically to and fro on a long swell from the westward. How long I slept, I cannot say; but when I awoke with a start, the candle had burned out, and the cabin was pitch-dark. What had waked me? Was it fancy, bred of the snake-story I had been reading, the impression of which was still vividly upon me, mystified and exaggerated by the sudden transition of ideas, or did I really hear a scuffling and flopping on the floor? Yes, there was no doubt about it! Something was slapping and writhing about over the bare boards with just such a noise as a hooked snake would make. After a moment's hesitation, I sprang out of bed to strike a light, and had taken a second step with the intention of groping for my matches, when, horror! I put my bare foot on something cold, slimy, and *alive*—wrigglingly and twistingly alive, as it 'squirmed' under my naked sole! I think I have stood on few objects for a shorter space of time than that during which I lingered on that creature; and darting back to bed again, lay there with a beating heart, and bathed in perspiration. Presently, the flopping ceased; but only to break out with renewed vigour after the lapse of a minute, and just as I was cautiously attempting another descent upon my matches, causing me to retreat once more with extreme expedition. It soon stopped again, and was resumed at longer and longer intervals and with less energy. The cobra was evidently growing weaker. At length, it ceased altogether. Whereupon I seized all the garments within reach, and hurled them on the floor in the direction from which the sounds had proceeded, hoping the reptile would seek shelter underneath them and remain quiescent during the night.

Now, of course this was all very foolish. There was no cobra within thousands of miles of me; besides, I am not more afraid of a snake than other people, knowing perfectly well that if I lay still it would not molest me. I think I would, under most circumstances, rather have a cobra than a cockroach near me. Thus I reasoned with my absurd terror, but to very little purpose. If there were no cobras in Brazil, there were other snakes just as venomous—rattlesnakes, jararacas, and bushmasters. Snakes often found their way on board ships in bales of medicinal woods, coir, and other cargo; or dropped into boats as they lay under bushes or along palm-shaded jetties; or escaped from boxes surreptitiously smuggled from the shore. It recurred to my disordered brain—I would have it remembered that I was weak and unwell—with great force, that only a short time before, a living serpent was actually discovered under the capsule of the patent lead on the quarter-deck of the Royal Mail steamship *Douro*, within a hundred miles of where we were, the reptile having obviously climbed up the quarter-line as the steamer lay moored to the wharf at Santos. Furthermore, though I can tolerate anything which I can see and understand, I have the greatest respect for the unknown in darkness.

All very foolish, as I kept reproaching myself; but it was of no use. The silence which succeeded was even worse than the slapping noise, and my fever-heated imagination kept picturing the snake gliding up over my bunk, and made me start as I fancied I felt its forked tongue darting against my hand or cheek; while I repeatedly kneaded my foot, to assure myself of the unreality of the thrills which shot up my leg. At last I gave way, and standing up on the bed, shouted through the ventilator at the top of my voice for the quartermaster. By-and-by I heard a distant 'Ay, ay, sir!' floating down the hatchway from the deck above, and presently saw the welcome gleam of a lantern along the alley-way. I was somewhat ashamed of my trepidation when the light arrived; and proceeded to remove the

pile of coats and trousers, seeking for the 'varmint' with a boldness which was not mine a few moments before. And there, on the floor, which glistened with its beaten-off scales, we found—a *flying-fish*, as big as an ordinary mackerel, which had sailed in at the open port as the ship rolled to leeward, and had danced itself to death on the boards! Its entrance must have been a pure accident, though not a very uncommon one in these latitudes. The fish seems to have little power of directing its flight in the air, and the aperture of the scuttle no doubt came in its straight line of course. I need hardly say I did not mention anything of my late ophidian hypothesis to the quartermaster, but presented him with the subject of it. Probably it was cooked and eaten as soon as he came off watch, for the flying-fish is one of the most delicious of the denizens of ocean.

Flying-fish are certainly preferable to venomous serpents in one's cabin, even were the latter entangled with hooks in their stomachs; but the finny intruder can make himself disagreeable too, at times. I remember an old Frenchman rushing on deck one night with his face and breast streaming with blood, roaring out that the Enemy of mankind was below; when it was found that the 'enemy' on this occasion was a large flying-fish, which had flown against him and scratched him severely with its enormous fin-wings.

THE MONTH.

SCIENCE AND ARTS.

RESPECT for relics of the past, and a desire to preserve those landmarks of time which speak of a period when no books were written and no histories compiled, are feelings which denote an advanced state of civilisation. We have learned Societies which take perhaps more interest in prehistoric man and his cave-dwellings than they do in their fellow-beings of this present time. We have Archæologists who can tell us all about the pile-dwellings the remains of which are found in Swiss lakes and in many other parts of the world; and we have others who will discourse to us concerning the three Ages of man as represented by the Stone, Bronze, and Iron implements which he has left behind him. The interest which centres around the buried cities of the world is naturally of a wider nature, for there are records which give us an insight into the lives of those who peopled such cities. The ruins of Herculaneum and Pompeii have an unusual interest attached to them from their terrible end. But other ruined cities have in them plenty to arouse the curiosity and to interest the attention of the antiquary. Of these places, a foremost position must be given to the ruins of Ephesus, which, from its scriptural associations, must plead recognition from all. But the ruins of Ephesus have not been taken care of; we learn that the city is a mass of ruined columns, fragments of arches, broken sarcophagi, and that it is covered with debris. The Temple of Diana, supposed to have been the most magnificent in the world, has now little to distinguish it from the rubbish surrounding it, although a piece of marble here and there gives, from its exquisite tracery, an idea of former splendour. The Ephesus Exploration Committee are appealing to the public for funds to carry on their work, and it is to be hoped that they will be instrumental in preserving the ruined city from further dilapidation.

Funds are also sought to aid the Society of Antiquaries in excavating what are considered to be among the most remarkable relics of the Roman occupation of Britain. The famous hot springs of Bath afford plenty of evidence that the Romans appreciated their good qualities, for they took the trouble to build round them a massive wall, cased on the inside with lead. Excavations beneath the pump-room have revealed the existence of an old bath eighty-one feet in length by thirty-eight in width, floored with blocks of masonry, and retaining its old lining of lead. There are indications that these Roman baths occupied a large area, the greater portion of which still remains buried beneath more modern buildings.

Mr Carl Bock, the Swedish traveller, whose explorations in Borneo have been brought before the public in book-form, has recently returned from an adventurous trip into Siam, and has visited many districts where no European has previously penetrated. In spite of the cordial protection offered by the king, and His Majesty's command that Mr Bock should carry the royal standard of Siam, the white-elephant flag, the traveller met with great opposition in various parts of the country. The inhabitants were not impressed with a sight of the white-elephant flag, perhaps because they had no idea of the importance attached to such a national emblem. Unfortunately, they showed their dislike to Mr Bock's progress by destroying a large portion of the natural-history collection which he had accumulated.

A St Louis newspaper furnishes some interesting facts in connection with alligator-catching and killing, occupations which give employment to a large number of persons in the south of the United States. The mode of catching the creature is as follows: The young ones are first secured as they play about the hole where the parent is lying. A noose is then so arranged that immediately the animal emerges from its lurking-place, its head is thrust within it. Another noose is then secured to the tail; and the animal is strapped down to a board, and is towed away behind a boat in which her young ones are placed. The hide of a large alligator is worth between one and two dollars, and can be transformed into splendid leather. Besides this, the alligator is valued for the oil which it affords, which, although of an unpleasant odour, is considered a good remedy for rheumatism.

The Report of the department of Agriculture of Manitoba will remove the impression which, for some unascertained reason, has gained currency—that little or no fruit could be raised there. The list of fruits indigenous to Manitoba and the North-west Territory given in this Report is by no means a scanty one. Plums, grapes, cherries, currants; all kinds of berries,

from raspberries and strawberries to the more humble blackberry, flourish here in profusion. The Report also removes another fallacy—namely, that the crab-apple must be the only representative of its class which can flourish in Manitoba. It is pleaded that the same idea was once urged with regard to other States which are now exporting their thousands of barrels of splendid apples to foreign markets.

We have more than once referred to the systems of drying hay, which, according to many reports, have been so successful, but which, according to the judges at the last show of the Agricultural Society, were not thought worthy of the prize offered for the best method. Another mode of storing food for stock is now arousing the interest of farmers; and it offers, both in cheapness and simplicity, no obstacle to a trial of its merits. That these merits are great, seems unquestionable, from reports which have reached this country from the continent and from the United States. The system in question is known as *Ensilage*, and consists in storing green fodder in a specially constructed air-tight pit called a *Silo*. This pit can be of any convenient size, and the best material for its walls is concrete. The materials with which it is stored may consist of every kind of green food used for cattle, excepting roots. These are usually cut into short lengths by a machine, and are then thrown into the pit. The vegetable mass is then covered with planks, and weighted with barrels of sand until its bulk is reduced about two-thirds. A certain amount of fermentation is naturally set up; but it does not appear to affect the flavour of the stored food, which cattle eat greedily. Even in the wettest weather, the fodder can be so stored without risk of failure, if the operation be properly conducted. The *silo* is opened periodically, when the food is cut away in sections, just as a truss of hay is cut from a stack; but if necessary, the opening can be postponed to an indefinite period, as the fodder keeps as well as if it were sealed down in an air-tight tin can. We cannot meanwhile devote space to enumerate the advantages which are claimed for this new departure in agriculture, but intend recurring to the subject in an early number.

Miss Ormerod's lecture, given at the Royal Agricultural College, Cirencester, on 'The Effects of Weather on Insect Life,' contained some interesting observations relating to hibernation. The lecturer pointed out that this phenomenon was a distinct condition from the mere effect of cold, and assumed a constitutional influence, under which, at a certain season, insects instinctively prepared a shelter for themselves. This shelter was specially selected under leaves or stones; and in some cases they prepared a cell to protect their bodies, while they passed into a motionless state, with functions decreasing in power with increase of cold. Though frozen so hard that they could be broken across like dried sticks, many kinds of caterpillars were not injured by the cold so long as they were protected in the shelters which they had selected or made for themselves. The remedy for getting rid of such pests was for farmers to cultivate their land in the autumn, so as to throw out and expose the creatures to the frost, thaw, and wet which followed. The egg-laying places—rank grasses and weeds—should be destroyed; and it should also be remembered that liming and the use of chemical manures are important factors in diminishing the number of insect pests.

More than forty years ago, there was a strange craft which appeared upon the waters of the Neva. It was contrived by a Russian Professor named Jacobi, and was worked by electricity. Since that time, we have made great strides in electrical science, and the batteries which Jacobi used, with their zinc plates and corrosive acids, have been supplanted by dynamo-machines turned by steam-power. The modifications of Planté's secondary batteries, which have recently made such a stir in the world, have opened up new employments for electricity, and the latest which has been recorded is once more represented by a battery-driven boat. This electric launch was recently tried on the Thames with satisfactory results. It measures twenty-six feet in length, and draws about two feet of water. It has neither fire, boiler, nor chimney; indeed, it is without any visible means of propulsion. But stowed away under flooring and seats are forty-five boxes, containing secondary batteries, which, before starting on its trial trip, were charged by a dynamo-machine on shore. It was calculated that the power stored was equal to that of four horses, and would last for six hours. From the electrician's point of view, the boat is a great success. But in order to find out whether it can compete with steam, we must learn its cost of construction, particulars of wear and tear, cost of power expended in charging the batteries, &c. Of late years, we have learned what electricity can do in the way of storage, in transmission of power, and in giving us light. To successfully compete with existing systems, it must be equally cheap.

One more recent electrical application is deserving of notice, from its useful and practical character. This is a contrivance for stopping a steam-engine by the mere pressure of a button, which button may be at a point at any distance from the engine itself; or there may be numerous buttons at different points, the pressure on any one of which will stop the engine. We need not enter into the details of the contrivance, beyond saying that an electro-magnet acts instantaneously upon the stop-valve of the engine. Its use in large cotton or woollen mills—to which it has recently been applied by the inventor, Mr Tate—is obvious, when we remember how easily some accident may arise, when it may be necessary to stop the works without a moment's delay. Another projected use for it is on board ship, so that in case of impending collision, the captain can himself turn off the steam, without losing time by signalling in the usual way to the engineer in charge. The apparatus is manufactured by Duncan Brothers, 32 Queen Victoria Street, London.

The phrase 'Recommended by the faculty,' has been long a favourite one with clever advertisers, who know well that the majority of persons look upon doctors as magicians and their drugs as infallible. Indeed, the superstition natural to man may be said to show itself principally in the modern belief in drugs; hence the success of any patent medicine which is sufficiently well advertised. But beyond ordinary drugs, there are a number of well-known remedies for various

complaints, which, under the care of garrulous old nurses and others, have been handed down from generation to generation, and frequently employed; but which are neither recognised nor recommended by the faculty. An instance in point is afforded by a means of dressing wounds which has been successfully practised by Dr Neuberg. Two years ago, a labourer presented himself who had sustained, some days previously, a compound fracture of both bones of the fore-arm. A comrade at the time of the accident had surrounded the limb with a thick paste of peat-mould. Dr Neuberg, on examining the wound, found that it was healing beautifully and without suppuration. The limb was then better fixed, redressed, and the man made a good recovery. The doctor was then led to investigate the properties of this peat-mould, which doubtless had had so much to do with the patient's rapid recovery. He found it to be, as is well known of it in peaty districts, a powerful antiseptic, and to take up nine times its own weight of water. Its soft nature allows it to be placed in bags in required positions on the body, and it has the further advantage of being cheap. This peat-mould, the virtues of which have thus been transmitted to us by a labouring-man, is likely to prove a most useful agent in dressing wounds.

At the Paris Academy lately, some curious and interesting notes relative to sulphur-fumes as a preventive of malaria were read by M. d'Abbadie. He stated that some elephant-hunters from plateaux with comparatively cool climate can go into the hottest and most deleterious Ethiopian regions without being attacked by fever, and that they attribute their safety to the daily practice of fumigating their naked bodies with sulphur. He also quoted cases where sulphur-mines were free from disease, whilst the inhabitants of villages near at hand were constantly attacked by fever. It has always appeared to us that sulphur as a curative agent has been too much neglected in our own country.

The approach of the burglar season has been as usual ushered in by many suggestions for the protection of nervous householders. Among recent contrivances for confounding the schemes of housebreakers, a lamp has been invented which acts as a kind of danger-signal to the police. It is connected with a battery and wires to any doors or windows which need protection, and so long as such apertures are shut, the lamp burns with a white light; but directly an attempt is made to force an entrance, a red-glass disc falls before the lamp, and tells the passing policeman that there is something wrong. Our own opinion is that a good loud-tongued electric bell would be far more serviceable. A burglar who found that by his act of forcing a window he had set up an alarm which would wake the entire household, would most certainly make good his retreat without delay. The old-fashioned plan of fixing a common bell into the shutter-bar is by no means to be despised.

At the Sanitary Exhibition at Newcastle, the Richardson gold medal for 'an exhibit of pre-eminent merit' has been awarded to Siemens's regenerative gas-burner. This burner, by complete combustion, is said to save fifty per cent. of gas, while at the same time it does not vitiate the air of the place in which it is used. At the same Exhibition, some very successful smoke-consuming stoves were shown, which have been adopted in some lead-works at Newcastle, solely for the good of the town; for where manufacturers only pay about three shillings per ton for their fuel, there is little need to employ such contrivances solely on the score of economy.

It is a curious slur on our boasted civilisation in this nineteenth century, that old and well-worn superstitions should crop up from time to time, and should receive a vast amount of credence from persons whose minds are not supposed to be unhinged. Ghosts, spiritual manifestations of the Brothers Davenport type, second-sight, and even witchcraft, occasionally show a vitality which is extraordinary. The divining-rod is the last exhumation of this character. Legendary lore as to the efficacy of a twig, balanced between the fingers of certain gifted persons, is common to the traditions of every country. The twig, or divining-rod, is supposed to point out by its movements the exact place of buried treasure, the place to bore for water, the occurrence of mineral lodes, and it will also help in pointing out the whereabouts of a murderer or other felon! A certain Madame Caillavah is said to have this gift of 'working the twig,' as it is vulgarly called; and it is reported that under the auspices of the French government, she is about to try her powers above the pavement of St Denis, in search of buried treasure. If the report be true—and we must assume that it is so from an article in the *Times*, and the curious correspondence which it has called forth—we can only say that the enterprise is not altogether creditable, and we may probably look for an ending to it which will be quite as disastrous if not so amusing as that which happened to Dousterswivel in the *Antiquary*.

The island of Cyprus has the unenviable possession of a description of locust found nowhere else. Its vast numbers raise it to the position of a plague, which, like that of old Egypt, would eat up every green thing in the land, if measures were not taken for its destruction. The government reward of what would be in our currency one halfpenny a pound for locust-eggs, which was trebled as the eggs became scarcer, resulted in the collection of nearly fourteen hundred tons in seven months. The payment of these rewards, together with the expense of constructing traps and screens to intercept the insect army, cost altogether more than one-fifth the total revenue of the island.

Some months ago, we referred to a new method of blasting coal by the heat and expansion caused by wetting cartridges of compressed lime. The system was then merely in its experimental stage; but having now been tried with the greatest success in various collieries all over the country, it may be looked upon as an accepted improvement in coal-working. Its first and most obvious advantage is its absence of flame; but other benefits accrue from its adoption. While the usual mode of blasting with gunpowder or dynamite breaks up the coal into small pieces, the gradual action of the new agent pulls it down in huge blocks. Large coal is, roughly speaking, nearly double the value of small. It is better for the consumer, for the carrier, and particularly for the miner, for

he is paid in many places according to the quantity of large coal which he gets. Ten thousand tons of gunpowder and dynamite are consumed annually in the British collieries. We can now look forward to the time when those dangerous agents will be replaced by the mountain limestone, which can be had in plenty all over the country.

We have lately seen models of the Hallidic Cable Tramway system, by which hilly streets can be mounted as easily as level roads. Highgate Hill, at the foot of which the existing tramways come to a discreet stop, is the first London road upon which the tramway is to be tried; but it has already won favourable opinions and large dividends in San Francisco and Chicago. A travelling wire-rope one inch in diameter, worked by a stationary engine, moves in a groove beneath the roadway. Projecting below the tramcar is a clutch, which, by turning a handle, grips the moving rope, and the car is tugged up hill by the distant engine. The system is worthy of attention, if only for the sake of the poor horses which are urged to drag up hill, burdens that are almost beyond their strength on level ground.

TWO CORBIES.

In a cliff not half a mile from my early northern home, a pair of ravens every summer built their nest. They had been there no one knew how long. The nest was about midway between the top of the cliff and the sea at its base, being placed within a small cave on the face of the precipice, where it was safe from all invaders. The young ones were insatiable; and as their parents liked to see them well fed, it occasionally happened that a hen or duck might be found amissing from the farmyard.

In the same cliff, but nearer the water, and just over the mouth of a cave, a cormorant—or shag, as we call the bird—built her nest on an open shelf, so that we could see the eggs from the top of the cliff. The male raven had seen them too, and resolved to transfer the eggs to his nest. But this did not prove to be so easy as it had looked; for the shag, with her long neck and hooked bill, defended her property to the last. The raven did not like to come to close-quarters with her, but sought to gain the eggs by art and perseverance. He would alight on one end of the shelf, and sidle up to the shag as near as he dared, picking at the outside material of her nest, and thus provoking her to make a dive at him, so as to draw her off the eggs. That gained, he would spring to the other side of the nest to seize an egg. But the shag would wheel round and meet him with open mouth, sometimes ruffling a feather out of him. This went on now and then for several days, till one day the shag got a firm hold of him, and both tumbled over plump into the sea. Unfortunately, the shag lost her hold as they fell into the water, or perhaps she had to let go; and the raven getting on her back, was soon on the wing. The shag by-and-by got up also; but ere she could reach her nest, the raven, drenched as he was, had removed the eggs, not to his nest, but to a short distance, from which he could carry them away at his leisure.

The poor shag had no avenger, and there the matter seemed to terminate. But one night shortly after, a thunder-storm came on from the direction of the sea in front of the cliff. The rain was heavy, and the thunder loud; and next morning the 'corbies'' nest with their family had been washed away. I saw the bereaved parents sitting on the top of the cliff, each a picture of desolation, especially the mother-bird.

After a day or two, we began to hear of sheep being destroyed by some strange agency, and then we were told that it was the work of the 'corbies.' This did not seem credible; but more than one person could testify to having seen the birds at the work. One morning, a choice sheep of mine was found destroyed; and I started at once with a gun to shoot the destroyers. But they knew what the weapon meant; and for eight days, early and late, my efforts were unavailing. At last I killed a raven, though whether one of the destructive birds I could not be certain; but from that day, the sheep were safe, and the birds never again seen.

During nine days, these two ravens killed no fewer than thirty strong full-grown sheep. Their mode of action was discovered to be as follows: The mother-bird would fly on to the sheep's face, fixing her claws below the eyes, and seizing the top of the head with her bill, would flap with her wings and scream frightfully. Her mate, ever near, would, when the sheep was so fixed, get on her back and dig a hole through to the kidneys. The sheep, distracted and blinded, would sometimes run over the cliff, sometimes into a ditch, and sometimes fall down exhausted. In no case were the ravens known to leave their victim until life was extinct, snapping the windpipe to that end, when other means failed; and in no case were they known to feed on the sheep's carcase. The loss of their young ones seemed to have excited them to madness, and the sheep seemed to be the only living thing on which they could vent their rage. Had demoniacal possession been a present-day affliction, I should have regarded these ravens as a case in point.

OCCASIONAL NOTES.

PORPOISE LACES.

We have received, says *The Boot and Shoe Trades Journal*, so many requests for enlightenment on this class of goods, that we believe the following result of independent investigation into the matter will be welcomed by most of our readers. It may perhaps cause surprise to some to learn that there is not, and never has been, such a thing as a real porpoise lace; that is to say, a lace cut from the animal so well known on our coasts as the porpoise. The skin of this creature has been found to be perfectly useless when tanned and dressed; but notwithstanding this, the name has obtained universal currency ever since these goods were first introduced into the English market. It is from the skin of the Beluga, or white whale, caught in the northern seas, that what are commercially known as genuine porpoise laces are cut, and,

so far as we know, they cannot, when properly prepared, be surpassed for wear and strength. The imitations are, however, so various, and manufactured so closely to resemble the 'real' article, that they may well deceive every one but an expert in the trade. The majority of these imitations are, we are told, made from calf-skin—both English and French, although some, especially the cheaper kinds, are cut from buffalo hide, kips, &c.

In order to get a good imitation of the smooth surface of the porpoise, the grain of the calf-skin is carefully removed, or split, during the process of dressing, after which a finish of black with a good surface completes the process, when they are ready to be cut up for 'real' porpoise laces. In order, however, that these deceptions may be detected, our contemporary gives various tests, by observing which the purchaser need not be led astray. The chief of these tests are—(1) The genuine article (Beluga laces) is smooth on both sides; while the imitation is rather rough on the flesh side. By taking a lace between the finger and thumb of each hand, about one inch apart, and 'wrinkling' up the grain side, the grain of the calf or other skin will readily be seen, if the lace is an imitation. (2) The substance of a real lace is usually even from end to end; while the imitations are often lumpy or uneven, and one end is nearly always thicker than the other. (3) The real lace is always cut narrow, so as to reduce the cost; while the imitations are generally cut wide, so as to obtain strength. A wide 'porpoise' lace must always, therefore, be regarded with suspicion. (4) There is usually a difficulty in obtaining the imitation laces in the longest lengths, say fifty-four or sixty inches, because the parts of a calf-skin which may be used for this purpose do not usually run that length. (5) One other infallible test is, that the real lace is much more elastic than the imitation.

On the whole, it is suggested as a safer plan to purchase the laces in the 'russet,' as in that state the chances of deception are reduced to a minimum, very ordinary judgment sufficing to distinguish the real from the imitation before they have had the 'blacking' process applied to them.

THE MOONS OF MARS—A STRIKING COINCIDENCE.

The following likeness between scientific results as stated by a practical astronomer, and a happy guess as thrown out long before by a satirical author, may be regarded as a matter of more than merely literary curiosity. In the work of Mr Proctor, entitled, *Flowers of the Sky*, there occurs the following passage with respect to the planet Mars and its moons: 'Astronomers have long examined the neighbourhood of Mars with very powerful telescopes in the hope of discovering Martian moons. But the hope had so thoroughly been abandoned for many years, that the planet had come to be known as "moonless Mars." The construction, however, of a fine telescope which has been mounted at Washington, with an object-glass twenty-six inches in diameter, caused at least American astronomers to hope that after all a Martian moon or two might be discovered. Taking advantage of the exceptionally favourable opportunity presented during the planet's close approach to our earth in the autumn of 1877, Professor Asaph Hall, of the Washington Observatory, paid special attention to the search for Martian moons. At last, on August 16, 1877, he detected, close by the planet, a faint point of light, which he was unable to examine further at the time—to see if it behaved as a satellite, or as one of the fixed stars. But on the 18th he saw it again, and determined its nature. He also saw another still fainter point of light closer to the planet; and subsequent observations showed that this object also was a satellite. During the next few weeks, both the moons were observed as closely as possible, in fact, whenever weather permitted; and the result is, that we now know the true nature of their paths. The distance of the outer satellite from Mars' centre is about fourteen thousand three hundred miles; from Mars' surface, about twelve thousand miles. The inner travels at a distance of about five thousand seven hundred and fifty miles from the centre, and about three thousand four hundred and fifty miles from the surface of Mars.'

Now read another extract from a book, namely, Dean Swift's Voyage to Laputa in *Gulliver's Travels*, published a century and a half before this discovery was made, and the similarity between the number of the satellites and their distance in the satirical and the scientific treatises is certainly very striking. 'They [the Lilliputians] have likewise,' says Swift, 'discovered two lesser stars, or satellites, which revolve about Mars, whereof the innermost is distant from the centre of the primary planet exactly three of his diameters, and the outermost five; the former revolves in the space of ten hours, and the latter in twenty-one and a half; so that the squares of their periodical times are very near in the same proportion with the cubes of their distance from the centre of Mars; which evidently shows them to be governed by the same law of gravitation that influences the other heavenly bodies.'

THE DIRGE OF THE LEAVES.

Dead or dying,
Our funeral song the winds are sighing!
Dying or dead,
The rain-sodden earth is our chilly bed!
When summer days were long,
The warm air quivered and thrilled with song;
In full green life we waved to the wind,
Now withered and red we are left behind.
All dying or dead,
Our farewell is said,
And we flutter to earth and rot into mould,
Or pave the dark glades with fretwork of gold.
Our death is but change;
Through paths new and strange,
The force that is in us works on to its goal:
For in us, as in all things, moveth a soul
Which dies not, but lives,
And ceaselessly gives
The life-breath of being to that which was dead,
Till the violet springs where the leaves were shed.

J. H. M.

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